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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/664,960	09/22/2003	Seiji Yamaguchi	03500.017579	4954

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EXAMINER	
GRAINGER, QUANA MASHELL	
ART UNIT	**PAPER NUMBER**
2852	

DATE MAILED: 06/29/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application N .	Applicant(s)	
	10/664,960	YAMAGUCHI ET AL.	
	Examiner	Art Unit	
	Quana Grainger	2852	

-- The MAILING DATE of this communication appears on the cover sh et with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-22 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-22 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 22 September 2003 is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

2. The information disclosure statement filed 3/3/2004, 10/14/2003, and 9/22/2003 has been considered.

Drawings

3. The formal drawings are objected to because they do not depict the spiral blades having different inclination angles.

Title

4. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1, 3-5, and 12-14 are rejected under 35 U.S.C. 102(b) as being anticipated by Baba (JP 9-325609A). The developing apparatus by Baba comprises a developer bearing

member; and, a developer carrying screw placed adjacently to said developer bearing member in parallel with said developer bearing member, wherein an inclination angle of a carrying surface facing in a developer carrying direction of a spiral blade of said developer carrying screw to a shaft of said developer carrying screw is equal to or less than 60 degrees (abstract; figure 5). The inclination angle of the carrying surface is smaller than an inclination angle of a surface at an opposite side from the carrying surface of said blade (abstract).

Baba teaches a developing apparatus comprising a developer bearing member; and a developer carrying screw placed in parallel with said developer bearing member, wherein an inclination angle of a carrying surface facing in a developer carrying direction of a spiral blade of said developer carrying screw to a shaft of said developer carrying screw is smaller than an inclination angle of a surface at an opposite side from the carrying surface of said blade (abstract; figure 5). The developer carrying screw is placed adjacently to said developer bearing member.

Baba also teaches a developing apparatus comprising: a developer bearing member; and a developer carrying screw placed in parallel with said developer bearing member, wherein a base portion of a carrying surface facing in a developer carrying direction of a spiral blade of said developer carrying screw has a curved surface portion, and a base portion of a surface at an opposite side from the carrying surface is a non-curved surface (abstract; figure 5). The curved surface portion ranges substantially a same area as a pitch of said screw in the developer carrying direction (figure 5).

7. Claims 1-22 are rejected under 35 U.S.C. 102(b) as being anticipated by cited reference Sato (JP 10-221937A; computer translation). Sato teaches a developing apparatus comprising: a developer bearing member; and, a developer carrying screw placed adjacently to said developer

bearing member in parallel with said developer bearing member, wherein an inclination angle of a carrying surface facing in a developer carrying direction of a spiral blade of said developer carrying screw to a shaft of said developer carrying screw is equal to or less than 60 degrees. The inclination angle of the carrying surface is equal to or more than 50 degrees and equal to or less than 60 degrees. The inclination angle of the carrying surface is smaller than an inclination angle of a surface at an opposite side from the carrying surface of said blade. The developer carrying screw is placed adjacently to said developer bearing member.

Sato also teaches a developing apparatus comprising: a developer bearing member: and a developer carrying screw placed in parallel with said developer bearing member, wherein a spiral blade of said developer carrying screw faces in a developer carrying direction, and has a plurality of carrying surfaces having different inclination angles with respect to a shaft of said developer carrying screw. The developing apparatus wherein when a distance from a reference surface of the shaft of said developer carrying screw to a tip end of the blade is HI, and a distance from the reference surface to a point P at which the plurality of carrying surfaces are intersecting each other is H2, $H2 < H1 \times 1/2$ is satisfied. The developer carrying screw further satisfies $H1 \times 1/3 < H2 < H1 \times ½$. The developing apparatus wherein an inclination angle of the carrying surface near to the shaft of said screw is equal to or more than 3 degrees and equal to or less than 50 degrees.

Sato teaches a developing apparatus comprising: a developer bearing member; and a developer carrying screw placed in parallel with said developer bearing member, wherein a base portion of a carrying surface facing in a developer carrying direction of a spiral blade of said developer carrying screw has a curved surface portion, and a base portion of a surface at an

opposite side from the carrying surface is a non-curved surface. The curved surface portion ranges substantially a same area as a pitch of said screw in the developer carrying direction. The developer carrying screw has a first blade with the inclination angle of the carrying surface facing in the developer carrying direction having a first value, and a second blade with a second value smaller than the first value, and said second blade is adjacent to said first blade, at an upstream side in the developer carrying direction. The distance from a reference surface of the shaft of said developer carrying screw to a tip end of said first blade is H1, and a distance from the reference surface to a tip end of said second blade is H2, H2 < H1 x 0.7 is satisfied. The inclination angle of said first blade is larger than 60 degrees, and the inclination angle of said second blade is larger than 5 degrees and smaller than 40 degrees. The surface of a space between said second blade and said first blade at the upstream side of said second blade in the developer carrying direction is inclined to the developer carrying direction. The distance from a reference surface of the shaft of said developer carrying screw to a tip end of said first blade is H1, and a distance from the reference surface to a point P at which the carrying surface of said first blade and the surface in the space are intersecting each other is H3, H3 < H1 x 1/2 is satisfied. The inclination angle of the surface in the space is larger than 5 degrees and smaller than 40 degrees. The developer carrying screw is placed adjacently to said developer bearing member.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

10. Claims 6-7, 11, 15-16, 19 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Baba in view of Jyoroku (5,835,828). Baba does not teach a developer carrying screw wherein a spiral blade of said developer carrying screw faces in a developer carrying direction, and has a plurality of carrying surfaces having different inclination angles with respect to a shaft of said developer carrying screw.

Jyoroku teaches a developing apparatus comprising a developer bearing member: and a developer carrying screw placed in parallel with said developer bearing member, wherein a spiral blade of said developer carrying screw faces in a developer carrying direction, and has a plurality of carrying surfaces having different inclination angles with respect to a shaft of said

developer carrying screw. The carrying surface near to the shaft of said screw has the smaller angle than the carrying surface farther from the shaft of said screw.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the teaching of the Jyoroku with the stirring member of Baba to reduce the maximum torque required to effectively stir the toner (Jyoroku; column 1, line 65 - column 2, line 2).

Prior Art of Record

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Sharpe (5,204,721) teaches a screw having plural flight portions having different pitches therebetween.

Contact Information

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Quana Grainger whose telephone number is 571-272-2135. The examiner can normally be reached on weekdays between the hours of 7-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Arthur Grimley can be reached on 571-272-2136. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR

system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Quana Grainger
Primary Examiner
Art Unit 2852

QG